

New Species of *Cestrum* (Solanaceae) and Synonymy under Two Widespread Species

Carmen Benítez de Rojas

Facultad Agronomía, Universidad Central de Venezuela, Maracay,
Apartado Correos 4597, Aragua, Venezuela

William G. D'Arcy

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166, U.S.A.

ABSTRACT. Three new species of *Cestrum*, *C. tillettii*, *C. jaramillanum*, and *C. ruizteranianum*, are newly described from Venezuela. *Cestrum tomentosum* L. f. and *C. strigilatum* Ruiz & Pavón have been identified as the correct names for two species for which many names have been proposed, and synonymies for these two species are presented.

Three new species are described from different parts of Venezuela: Sierra de Perijá in northeastern Zulia State, the western, Andean region of Mérida State, and the more or less central part of the coastal range in the Federal District. The last species is also found in Ecuador.

Two other widespread species have been known under many different names, and because concepts of their ranges have been fragmented with so many names in use, we present the synonymy here, rather than waiting until a revision of the genus can be published for some major region. One of these, *C. tomentosum* L. f., ranges from Mexico to Peru and Venezuela; the other, *C. strigilatum* Ruiz & Pavón, ranges from Costa Rica to Venezuela, Peru, Brazil, and Argentina. *Cestrum* embraces many species with local or regional distributions, but these two add to the short list of species that are widespread in both Central and South America: *C. alternifolium* (Jacquin) O. E. Schulz, *C. latifolium* Lamarck, *C. megalophyllum* Dunal, *C. microcalyx* Francey, *C. reflexum* Sendtner, *C. racemosum* Ruiz & Pavón, and *C. scandens* Vahl.

Cestrum jaramillanum Benítez & D'Arcy, sp. nov. TYPE: Ecuador. Pichincha: Centenela, Montañas de Ila, 12 km E of Patricia Pilar, virgin rain forest, 550–650 m, 79°19'W, 0°34'S, 10 July 1979 (fl), *Løjtnant & Molau 15835* (holotype, AAU; isotype, GB). Figure 1.

Arbor frutexve 2–3 m, foliis ovatis, basi rotundatis, truncatis, subcordatisve, membranaceis, glabrescentis, foliis minoris ovatis. Inflorescentia axillaria, subumbellata, axibus 6–7 mm longis, tomentulosis glabrativve. Bractee sessiles foliaceae, lanceolatae, ad maturitatem fructus persistens, lateraliter calycem involvens.

Shrub or small tree 2–3 m, branched, the branches slender, at first compressed, sometimes drying grooved, later terete, tomentulose with mostly reduced, crinkled ascending hairs, the internodes 3–4.5 cm long. Leaves ovate, 10–14 × 4–7.5 cm, basally rounded, truncate, or subcordate, apically short-acuminate, membranous or chartaceous, glabrous above on emerging, the basal half beneath tomentulose on emerging, glabrescent, the veins inconspicuous above, the costa and major veins slightly reddish, somewhat elevated and finely puberulent beneath, the lateral veins 7–8 on each side, ascending, distally arcuate or looping and forming a submarginal vein 0.5–1 cm from the margin, the margin plane; petiole 5–10 mm long, finely pubescent; minor leaves ovate, 7 × 1.5 mm, sessile, glabrate. Inflorescences axillary, the peduncle ca. 1 mm long, longer in fruit, subumbellate with 3 axes 6–7 mm long, tomentulose to glabrate, in fruit 15 mm long. Flowers sessile; bracts foliaceous, narrowly lanceolate, 10 × 3.5 mm, persistent in fruit and partially enveloping the calyx laterally, sessile, acuminate, glabrate or pubescent on both sides; calyx tubular, 4 × 2.5 mm, drying stramineous, basally rugulose, glabrate, 5-lobed, the lobes deltoid to broadly acuminate, faintly 5-costate; corolla pale green, 29–30 mm, the tube 26 mm long, gradually expanded upward, the mouth not contracted, 2.5–3 mm wide, 5-lobed, the lobes 6–6.5 × 1 mm, oblong, the apex acute, the pleated margin short-pilose; stamens 22–23 mm long, the filaments straight, smooth, glabrous, basally adnate for 21 mm, free 1 mm; anthers orbicular, 1 mm across; ovary 0.7 mm diam., slightly rugose, glabrous; ovules 5–6;



Figure 1. *Cestrum jaramillanum* Benítez & D'Arcy. —A. Flowering branch. —B. Flowers. —C. Flower opened longitudinally showing corolla, anthers, and pistil. —D. Fruit. (A, B, C after Løjtnant & Molau 15835; D after Steyermark 92147.)

style 23 mm long; stigma slightly bilobed, included. Fruit ovoid, 8–10 × 6–7 mm, the pericarp thin, about equaling and loosely enclosed in the bract; seeds 3–4, dark brown, 5–6.5 mm long.

Cestrum jaramillanum is found in moist forests on the western slopes of the Ecuadorean Andes and on slopes of the Venezuelan coastal cordillera at 550–1300 m elevation.

This species is named in honor of Jaime Lucio Jaramillo Asanza, professor and active plant collector at the Pontificia Universidad Católica del Ecuador in Quito, who has greatly assisted many botanists visiting his country.

This new species is suggestive of *Cestrum reflexum* Sendtner and *C. amictum* Schlechtendal, both described from Brazil and having conspicuous bracts, but in *C. reflexum* the corolla tube is abruptly expanded at the throat, and the plant is scandent; in *C. amictum* the leaves are basally acute or acuminate and decurrent on the petiole, and the minor leaves are reniform. This new species is apparently a plant of lower or middle elevations, the two collections being made at 550–1300 m.

Paratype. VENEZUELA. **Distrito Federal:** Cerro Naiguatá, laderas pendientes del Norte, arriba del pueblo de Naiguatá, bosque humedo denso, Lomas de Las Delicias entre Quebrada de Basenilla y Quebrada Guayoyo, 9–12 km suroeste de Hacienda Cocuizal, 1000–1300 m, 15–19 Nov. (fl, fr), *Steyermark 92147* (NY, US, VEN).

Cestrum ruizteranianum Benítez & D'Arcy, sp. nov. TYPE: Venezuela. Mérida: Distrito Rangel, trail from La Negrita downstream towards Puente de La Escalera, montane cloud forest, 2550–2950 m, 1–2 Nov. 1978 (fl), *Luteyn et al. 6171* (holotype, NY). Figure 2.

Flores copiosi, calyce atrobrunneo, extus glanduloso, pilos sparsos ferens, corolla 20–26 mm longa, dilute viridi ex purpurea. Filamenta 7–9 mm ad corollam coalita, ad basim parte adnata pubescenti, in loco conjunctionis tumidis, geniculatis, parte libera 7.5–9.5 mm. Fructus haud suppetunt.

Shrub 1–4 m tall, erect, branched, young stems angular, terete when mature, scurfy pubescent with dark, crinkled, perhaps branched hairs. Leaves narrowly elliptical to elliptical, 4–6 × 1.5–3 cm, basally obtuse, apically acute or obtuse, firmly membranous, glabrous on both sides except for some scurfy hairs on minor veins, the major veins impressed above, elevated beneath, 8–10 on each side, ascending, looping and uniting near the margins, the margins slightly revolute; petioles 6–8 mm long, slender, inrolled, tomentulose above; minor leaves sometimes present, ovate, 10–13 × 5–7 mm, with petioles 0.5–1 mm long. Inflorescences axillary racemes, sometimes appearing as terminal panicles, 2.5–10 cm long; peduncles 0.7–5 cm long; bracts 1.5–2.5 mm, linear. Flowers with pedicels obsolete; calyx drying dark brown, tubular, 6–8 × 3–3.5 mm, faintly striate, thick, glandular and with sparse hairs outside, pubescent within and with glandular hairs halfway down, 5-lobed, the lobes 2 × 2 mm; corolla pale green, purplish out-

side, pale yellowish green inside, 20–26 mm long, exerted ca. 19 mm from the calyx, the tube 17–20 mm long, 3–3.5 mm at its widest, contracted around the ovary and then gradually expanded upward, the throat not constricted, 5 mm wide at the mouth, 5-lobed, the lobes 3–5 × 1.5–2 mm, narrowly triangular-acuminate, sometimes sparingly pubescent, the pleated margin inflexed and tomentose; stamens 15.5–19 mm long, adnate 7–9 mm, the adnate portion pubescent for the basal 3–4 mm, free part 7.5–9.5 mm, the insertion geniculate-tumid, 1.5–2.5 mm long; anthers orbicular, 1 mm across; ovary lobed, 0.7 diam., glabrous, papillose 4–5 mm below the stigma, exceeding the stamens by 1.5 mm; style 15–19 mm, stigma subcapitate, slightly bilobed, included; ovules 16–18. Fruit not seen.

Cestrum ruizteranianum is found in cloud forest ravines in the Venezuelan Andes at elevations of 2500–2900 m.

This species is named in honor of Luis Ruíz-Terán, a botanist who for many years collected interesting plants in Andean northwestern Venezuela.

As a herbarium specimen, this species resembles showy yellow-flowered species from upland Central America, e.g., *C. laxum* Benth, but the flowers are reported as pale green and purple. It differs also in its glandular calyx.

Although three collections are cited, they were made the same day by the same collecting party, perhaps at the same place.

Paratypes. VENEZUELA. **Mérida:** Distrito Rangel, Gavidia, orillas del camino entre el Hato de La Escalera y el puente sobre la quebrada La Escazes, 2550–2950 m, 1 Nov. 1978 (fl), *Ruiz-Terán et al. 16171* (MERF, MY), *16154* (MY).

Cestrum strigilatum is one of the most widespread species of *Cestrum*. It ranges from coastal Brazil and northern Argentina to Costa Rica, occurring from sea level to about 1600 m. In his monograph of the genus, Francey (1935) used the later name *C. calycinum* for this species. His rationale for use of names of Willdenow in Roemer and Schultes (1819) instead of those of Kunth (1818) was stated on p. 142 of the monograph, which cites Kuntze's *Revisio Generum* and Sendtner in *Flora Brasiliensis*. Some of the following synonymy was expressed by D'Arcy (1972) and Cabrera (1983), but not by Smith and Downs (1966). We have chosen not to lectotypify the species at this time.

Francey included *Cestrum lundianum* Dunal (in DC., Prodr. 13(1): 658) in synonymy under this species. Photographs of the type (Brazil, São Paulo,

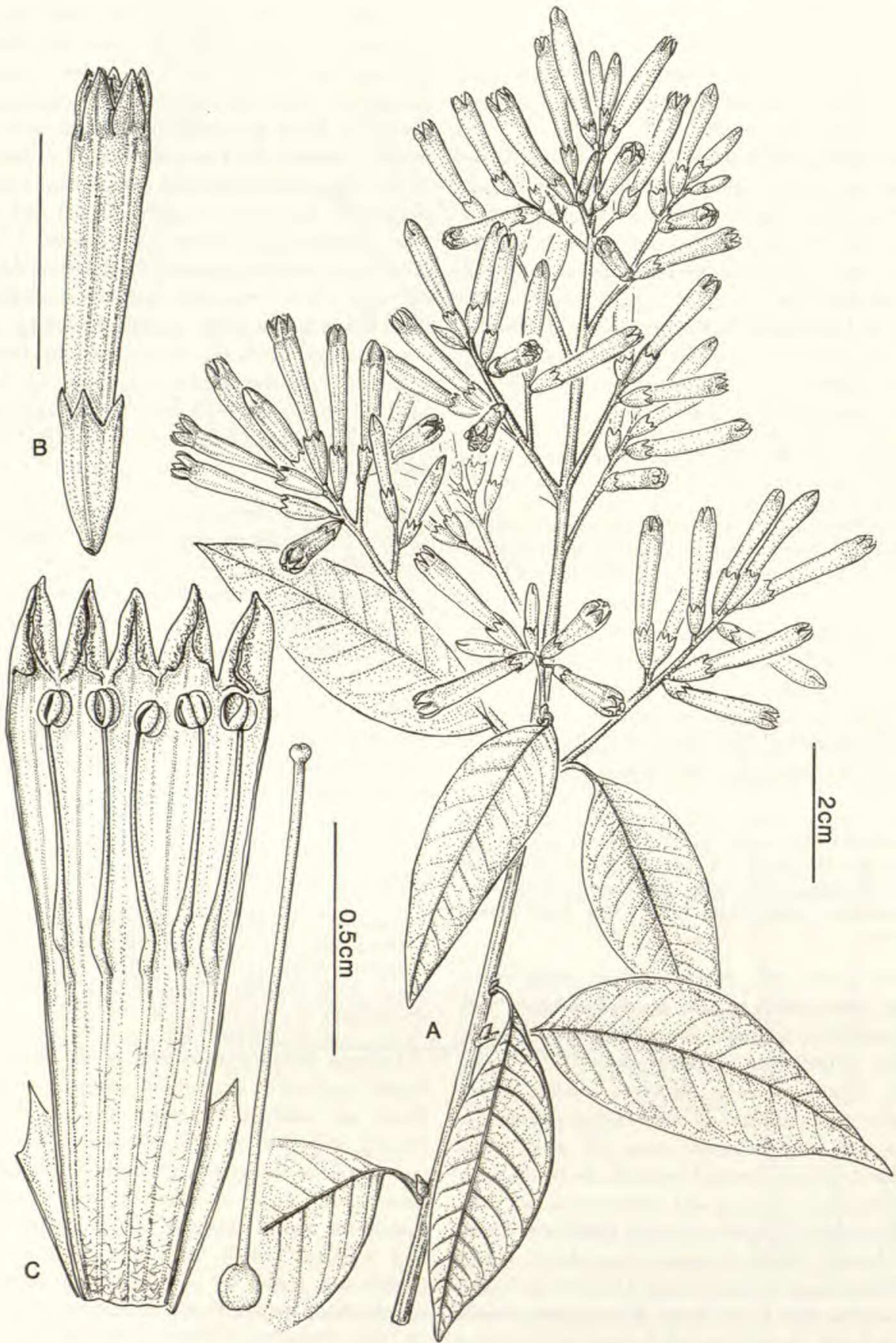


Figure 2. *Cestrum ruizteranianum* Benítez & D'Arcy. —A. Flowering branch. —B. Flower. —C. Flower opened longitudinally showing corolla, anthers, and pistil. (After Luteyn 6191.)

Lund 134 (G-DC, -IDC microfiche, =F photo 006898 (MO))) did not permit verification, but its identity with *C. strigilatum* seems unlikely.

Cestrum strigilatum Ruiz & Pavón, Fl. Peruv. 2: 29, t. 156. 1799. TYPE: Peru. Nemoribus versus Pozuzo, Chinchao et Cuchero vicos, Ruiz & Pavón s.n. (holotype, M; isotypes, B, HAL, fide Francey, neither seen, F photo of element once at B, 018394).

Cestrum calycinum Kunth, Nov. Gen. Sp. 3: 58. 1818. TYPE: Peru. Prope Gonzanama, 1180 hex, Bonpland (B-W 4461 not seen, microfiche). Synonymized by D'Arcy (1974); Cabrera (1983: 471).

Cestrum viridiflorum Hooker, Bot. Mag. t. 4022. 1843. TYPE: Brazil. Porto Alegre, Tweedie (K). Synonymized by Francey (1935: 137); Cabrera (1983: 471).

Cestrum unibracteatum Dunal in DC., Prodr. 13(1): 656. 1852. SYNTYPES: Peru. Sylvis Cochero, Dombey s.n. (G-DC, MPU, neither seen), Poeppig s.n. (sub "96 *C. longium*, Ruiz & Pavón 1246") (G-DC not seen, =IDC microfiche, F photo 006899 MO). Synonymized by Francey (1935: 142).

Cestrum unibracteatum var. [β] *brachystachys* Dunal in DC., Prodr. 13(1): 657. 1852. TYPE: Brazil. Circa Cujaba ubique, da Silva Manso 34 (G-DC not seen, =IDC microfiche, =F photo 023178 MO). Synonymized by Francey (1935: 142).

Cestrum cancellatum Dunal in DC., Prodr. 13(1): 657. 1852. TYPE: Peru. Poeppig 3080 (G-DC not seen, =IDC microfiche, =F photo of B, not extant 002969 MO).

Cestrum strigilatum (*strigillatum*) var. [α] *laxiflorum* Kuntze, Rev. Gen. Pl. 3: 220. 1893. SYNTYPES: Argentina. Salta: Orán, Lorenz & Hieronymus s.n. (NY); Bolivia. Cochabamba: Yungas "Juntas," Kuntze s.n. (NY). Synonymized by Francey (1935: 142); Cabrera (1983: 471).

Cestrum calycinum Kunth, Nov. Gen. Sp. 3: 58. 1818. *Cestrum strigilatum* (*strigillatum*) var. [β] *calycinum* (Kunth) Kuntze, Rev. Gen. Pl. 3: 220. 1893. SYNTYPES: Bolivia. Matto Grosso: West-Velasco bis Tunarigebirge, 200–2400 m, collector not named.

Cestrum impressum Rusby, Bull. New York Bot. Gard. 4: 425. 1905. TYPE: Bolivia. La Paz: Bang 2516 (NY not seen). Synonymized by Francey (1935: 137); Smith & Downs (1966: 230).

Sessea rugosa Rusby, Bull. New York Bot. Gard. 8: 119. 1912. TYPE: Bolivia. Apolo, 4800 ft., R. S. Williams 2449 (NY not seen). Synonymized by Francey (1935: 142).

Cestrum calycinum var. *tenuiflorum* Francey, Candollea 6: 142. 1935. Syn. nov. SYNTYPES: Paraguay. Villa Encarnación, Bettfreund 131; Argentina. Yaguara-Zapa, Niederlein 268b (G not seen, F photo 002998 MO).

Cestrum strigilatum var. *tenuiflorum* Francey, Candollea 6: 144. 1935. Syn. nov. SYNTYPES: Ecuador. Balao, Eggers 14274 (lectotype, designated here, W; isolecotype, US fragment). Guayaquil, Jameson 57 (B, M, W, none seen).

Cestrum aristeguietae Steyermark, Acta Bot. Venez. 6(1–4): 86. 1971. TYPE: Venezuela. Carabobo: wooded slopes along Río San Gian, 2 km below Planta Eléc-

trica, S of Borburata, alt. 350 m, J. & C. Steyermark 95463 (holotype, VEN; isotypes, NY, P, US).

Cestrum longifolium Ruiz & Pavón ex Dunal in DC., Prodr. 13(1): 657. 1852. Invalid name, cited in synonymy of *C. unibracteatum*.

Cestrum tillettii Benítez & D'Arcy, sp. nov. TYPE: Venezuela. Zulia: Distrito Perijá, headwaters of Río Guasare, Sierra de Perijá, Serranía de Valledupar, environs of Campamento Frontera V, along international boundary, 2700–3300 m, 10°23'07.8"N, 72°52'42.5"W, 10–19 July 1974 (fl), Tillett 747–1021 (holotype, MY; isotypes, AAU, MO, MYF, VEN). Figure 3.

Arbor 2–3 m alta, foliis glabris coriaceis, marginibus revolutis, foliis minoribus carentibus. Inflorescentia axillaris, congesta, tomentosa. Flores fragrantis diurni castanei, sessiles, calyce viride apice purpureo tubuloso, corolla 15–18.5 mm longa, staminibus 10–13 mm longis, geniculatis tumidisque ad insertionem; ovula 5. Fructus ovoideus 9 × 6 mm.

Tree 2–3 m tall; stems brown, glabrous, striate and scarred. Leaves firm, subcoriaceous, narrowly elliptical, basally narrowly cuneate, slightly acute near the top, the tip obtuse, 4–6 × 1.3–1.5 cm, dark green, shiny above, dull green beneath, the major veins sunken above, salient beneath, 6–8 on each side, the minor veins impressed beneath, the margin revolute, glabrous on both sides; petiole canaliculate, 3–7 mm long, glabrous. Minor leaves wanting. Inflorescences axillary, congested, the main axes tomentose, bright matte green, 1.5–3 cm long, the peduncles 5–7 mm long, pubescent, thickened, with circular scars from fallen flowers, flowers few per node. Flowers sessile (pedicels obsolete) with faint, sweet fragrance during the day; calyx yellow-green, flushed distally with dark purple, tubular, thick, costate, the costas especially conspicuous distally, slightly pubescent outside with hairs slightly thickened near the base, 4.5–5.5 mm long, 2–2.5 mm thick, 5-lobate, the lobes 1.5–2.5 mm long, narrowly triangular, the apex pubescent; corolla 15–18.5 mm long, the tube 13–16 mm long, slightly expanded toward the apex, the throat not noticeably contracted, the mouth ca. 2 mm wide, 5-lobate, the lobes 2–2.5 mm long, the folded margins pubescent; stamens 10–13 mm long; filaments white, adnate 6–9 mm, free 4.5 mm, the point of insertion geniculate-tumid, slightly pilose, 1 mm long; anthers brown, spherical, 0.5 mm diam.; ovary ovoid, glabrous, smooth, 1 mm diam., 5-ovulate; style 12–13.5 mm long, papillose 1–2 mm below the stigma, exceeding the stamens by 1.5 mm; stigma green. Fruit ovoid, 9 × 6 mm, pericarp thick, opaque; seeds 6–7, 3–3.5 mm long.

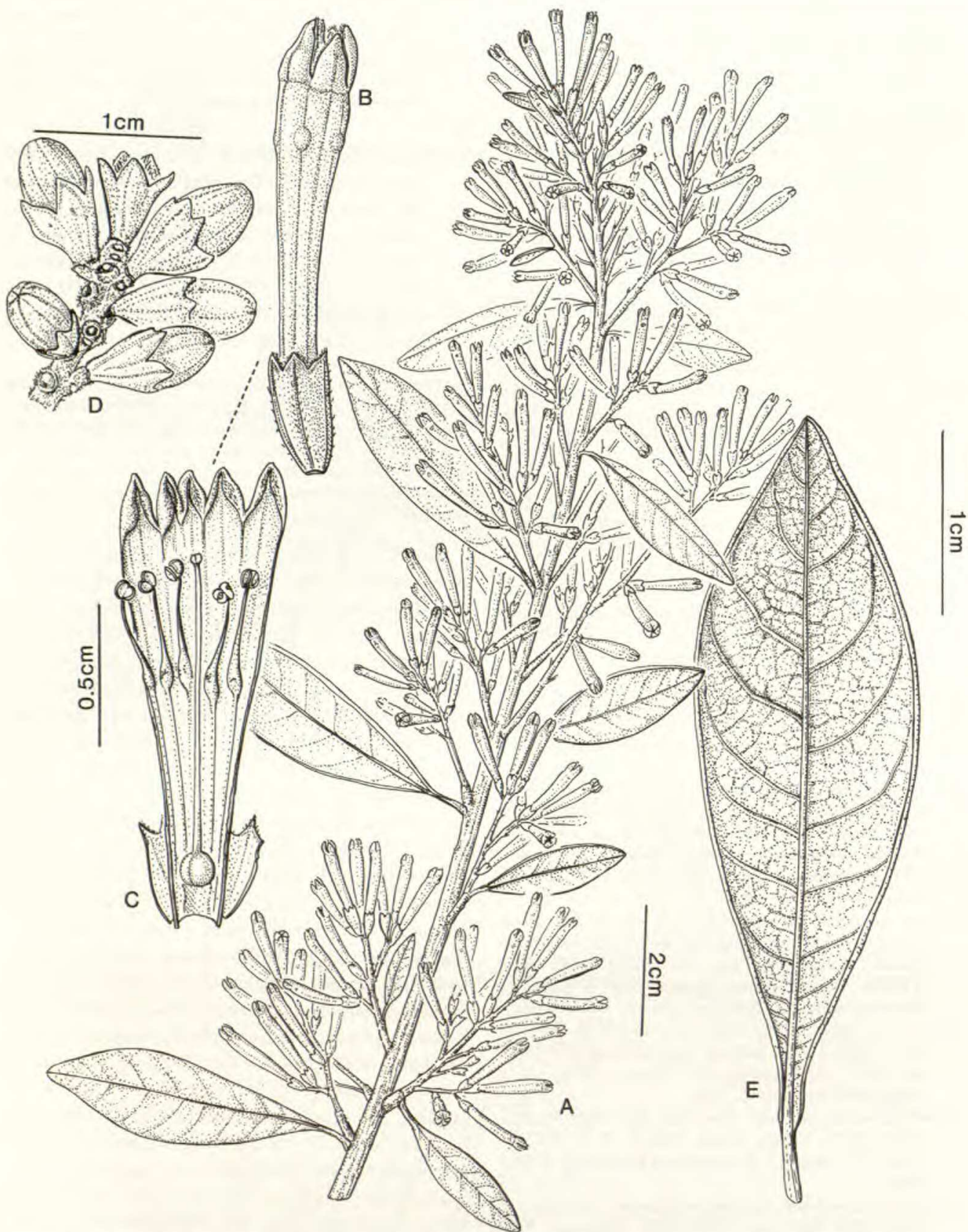


Figure 3. *Cestrum tillettii* Benítez & D'Arcy. —A. Flowering branch. —B. Flower. —C. Flower opened longitudinally. —D. Fruits. —E. Leaf, abaxial side. (A, B, C after *Tillet* 747–1021; E after *Tillet* 747–929.)

Cestrum tillettii occurs in cloud forests at the headwaters of rivers at elevations of 2700–3650 m. It has been found on the eastern side of the Sierra de Perijá, a mountain range shared by Venezuela and Colombia.

This species is named in honor of Stephen S. Tillett, professor in the Faculty of Pharmacy at the Universidad Central de Venezuela, Caracas. He was the leader of the expedition that collected the only known specimens of this species.

Paratypes. VENEZUELA. **Zulia:** Distrito Perijá, headwaters of Río Apón, Sierra de Perijá, Serranía Valledupar, Hacienda Buena Vista to N side of Cerro Laminado, ca. 5 km N of Buena Vista, along international boundary, 3300–3650 m, 10°20'23"N, 72°54'14"W, 9–10 July (fr), *Tillett & Hönig 747–929* (MY); Dist. Perijá, headwaters of Río Guasare along international boundary, "Campamento Frontera V," 2700–3300 m, 10°23'7.8"N, 72°52'45.5"W, 20–23 July (fl, fr), *Wood & Berry 88* (MO, VEN).

Cestrum tomentosum is one of the most widespread species of *Cestrum*, and in many places it is common, especially as a successional element, occurring from about 1000 to 2600 m elevation. The species has been collected from as far north as Sonora, Mexico, and as far south as extreme southern Peru. It is also found in northwestern Venezuela but is generally absent from the Amazon region of South America. It is a shrub or small tree, usually erect, with pubescent leaves, calyces, and corolla tubes, and it has a shiny, purple-black, fleshy fruit.

The identity of many of the names cited here was suggested by Nee (1986: 49), who also provided a good description (as *C. lanatum*).

Cestrum tomentosum L. f., *Suppl. Pl.* 150. 1781.
TYPE: Colombia. *Mutis 94* (holotype, LINN 258.6 not seen, =IDC microfiche).

Cestrum hirsutum Jacquin, *Pl. Hort. Schoenbr.* 3: 41, t. 324. 1798. Syn. nov. TYPE: Indias Occidentales: cult. hort. Schoenbrunn (W, B-W 4449, not seen, =IDC microfiche, =F photo 033032 MO).

Cestrum lanuginosum Ruiz & Pavón, *Fl. Peruv.* 2: 30, tab. 157. 1799. Syn. nov. TYPE: Peru. Prov. Arequipa: Camana, collibus arenosis, *Ruiz s.n.* (lectotype, designated here, G not seen, =F photo 002984; isolecotype, F).

Cestrum lanatum Martens & Galeotti, *Bull. Acad. Roy. Sci. Bruxelles* 12(2): 146. 1845. TYPE: Mexico. Veracruz: dans les bois et haies de la colonie de Mirador, 3000 pieds, *Galeotti 1208* (holotype, BR not seen; isotypes, G, K, NY, US, W).

Cestrum moritzii Dunal in DC., *Prodr.* 13 (1): 619. 1852. Syn. nov. TYPE: Venezuela. Caracas, *Moritz 309* (holotype, G-DC not seen, =IDC microfiche, =F photo 002988; isotypes, BM, MO).

Cestrum miersianum Weddell, *Chlor. And.* 2: 97. 1857. TYPE: Colombia. Sierra Nevada de Santa Marta, 3,300 m, *Linden 1615* (holotype, G-DC not seen, =IDC microfiche).

Cestrum miersianum Pittier, *J. Wash. Acad. Sci.* 22(2): 37. 1932, not Weddell (1857). Syn. nov. TYPE: Vene-

zuela. Mérida: San Rafael de Mucuchíes, 3150 m, *A. Jahn 767* (holotype, VEN; isotype, MO). *Cestrum neomiersianum* Benítez, *Rev. Fac. Agron. (Maracay)* 7: 90. 1974. New name.

Cestrum diasae Pittier, *J. Wash. Acad. Sci.* 22 (2): 29. 1932. Syn. nov. TYPE: Venezuela. Mérida: Misintá, arriba de Mucuchíes, 3500 m, *Pittier 12919* (holotype, VEN; isotype, US).

Cestrum meridanum Pittier, *J. Wash. Acad. Sci.* 22(2): 36. 1932. Syn. nov. TYPE: Venezuela. Vecinidades de Mérida, 1700 m, *Pittier 12858* (holotype, VEN; isotype, US).

Cestrum densiflorum Francey, *Candollea* 6: 195. 1935. Syn. nov. SYNTYPES: Venezuela. Mérida: entre Chachopo y Timotes, *Pittier 13294* (lectotype, designated here, NY; isolecotypes, F, MO, US, VEN); *Pittier 13323* (NY, VEN).

Cestrum densiflorum Francey var. *puberulum* Francey, *Candollea* 6: 196. 1935. Syn. nov. TYPE: Venezuela. Trujillo. San Pablo de Mendoza, *Pittier 13323* (holotype, VEN; isotype, US).

Cestrum verbascifolium Zuccarini ex Francey, *Candollea* 6: 191. 1935. Syn. nov. TYPE: cultivated in Berlin and Munich (B-W 4449 not seen, =IDC microfiche).

Cestrum ambatense Francey, *Candollea* 6: 169. 1935. Syn. nov. TYPE: Ecuador. Prov. Tungurahua: vicinity of Ambato, *Pachano 75* (holotype, NY; isotype, US fragment).

Acknowledgments. The authors acknowledge grants from the Consejo Nacional de Investigaciones Científicas y Tecnológicas, CONICIT (PI-056) and the National Science Foundation, NSF (INT-9116039). Michael Nee, The New York Botanical Garden, reviewed the manuscript and augmented parts of it.

Literature Cited

- Cabrera, A. L. 1983. Flora de la Provincia de Jujuy, República Argentina. Colección Científica del INTA, Buenos Aires.
- D'Arcy, W. G. 1972 [1973]. Solanaceae. In: R. E. Woodson et al., *Flora of Panama*. Ann. Missouri Bot. Gard. 60: 573–870.
- Francey, P. 1935–1936. Monographie du genre *Cestrum* L. *Candollea* 6: 46–398; 7: 1–132.
- Kunth, C. S. 1818. Solaneae. In: *Nova Genera et Species Plantarum*, Vol. 3. Paris.
- Nee, M. 1986. Solanaceae. In: *Flora de Veracruz*. 49: 1–191. Inst. Nac. Invest. Recursos Biót., Xalapa.
- Roemer, J. J. & J. A. Schultes. 1819. *Caroli a Linné equitis Systema vegetabilium secundum classes ordines genera species*, Vol. 4. Stuttgart.
- Smith, L. B. & R. J. Downs. 1966. Solanáceas. Parte I. In: P. R. Reitz (editor), *Flora Illustrada Catarinense*. Herbário "Barbosa Rodrigues," Itajai, Santa Catarina, Brazil.